PMD50

COST-EFFECTIVENESS ANALYSIS OF FOUR VALIDATED TECHNIQUES OF ACCELERATED PARTIAL BREAST IRRADIATION FOR THE TREATMENT OF EARLY-STAGE BREAST CANCER: SPANISH PUBLIC HEALTH SYSTEM STANDARD ESTIMATIONS

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OBJECTIVES: Partial breast irradiation (PBI) can be considered a safe alternative to standard whole breast irradiation (WBI) in favourable early breast cancer and, profitably, is delivered in a shorter time. Four different techniques have been described in randomized trials (follow-up > 4 years): intraoperative-radiotherapy (IORT), delivered at the time of tumorectomy; low-dose-rate brachytherapy (LDR), delivered in 3 days; external-beam radiotherapy (EBRT) and high-dose-rate brachytherapy (HDR), both delivered in 5 days. For comparison, WBI is delivered in seven weeks. The objective of this study was to compare the cost-effectiveness of the 4 different technical approaches to PBI, for the treatment of selected favourable early stage breast cancer patients, using current cost estimations within the Spanish Public Health System. **METHODS:** A decision-analysis model was performed using efficacy data from previous prospective trials, calculated in years without mastectomy (YWM). Direct costs were estimated based on charges applied by Madrid's Autonomous Community, and were expressed in Euros (€). For each modality of PBI, local recurrence rates where individualized, and charges weighted for the frequency of its occurrence. A probabilistic sensitivity analysis was conducted to evaluate the robustness of the results. **RESULTS:** A total cost of 5488.25 € was estimated for EBRT, 6595.87 € for LDR, 7454.10 € for HDR, and 8895,71 € for IORT. The incremental cost-effectiveness ratio (ICER) comparing IORT to EBRT was 17209.41 €/YWM. All brachytherapy techniques (LDR and HDR) were dominated. Sensitivity analysis showed that ICER depends mainly on recurrence level after EBRT, but also on IORT costs. **CONCLUSIONS:** In a Spanish Public Health Care scenario, IORT shows a reasonable a cost-effectiveness ratio for patients with early stage breast cancer and, due to its intrasurgical administration (same hospital admission required for surgery), should be considered a compelling alternative, in particular for patients with complex transportation demands to access radiotherapy facilities.

PMD51

COST-EFFECTIVENESS OF A PREDICTIVE TEST OF THE BENEFIT OF CHEMOTHERAPY

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OBJECTIVES: In breast cancer, adjuvant chemotherapy is often prescribed as a precautionary measure and sometimes unnecessarily. A diagnostic test based on an analysis of 21 genes estimating the risk of recurrence at 10 years for women with breast cancer in early stage has been developed (Oncotype-DX®). A cost-effectiveness model was implemented to evaluate the long-term costs and clinical outcomes associated with introducing this test to inform decision on adjuvant chemotherapy in France. **METHODS:** A Markov model was implemented to evaluate the impact of the test in terms of costs, life-years gained and quality-adjusted life-years (QALYs) in French clinical practice for patients with ER +, HER2-, node-negative early-stage breast cancer, over 30 years. A strategy using the genetic test to decide whether to administer chemotherapy or not was compared to utilization of standard decision criteria. The model accounted for the costs of testing, adjuvant chemotherapy and recurrence. Utilities were dependent on recurrence status and undergoing chemotherapy. Input data were obtained from a study evaluating the proportions of patients in which the genetic test led to change the oncologist's decision, as well as scientific literature and grey literature. **RESULTS:** The test was associated with savings of €570 (€1600 with productivity loss cost) per patient from societal perspective and gains of 0.15 life-years and 0.14 QALYs per patient. One-way sensitivity analyses showed that the cost was most sensitive to the recurrence cost and QALYs to discount rate and to the proportion of patients for whom the decision not to give chemotherapy was reversed with the test. **CONCLUSIONS:** The use of the test seems to represent efficient use of health care resources in French practice. This test provides an opportunity to optimize treatment prescription by avoiding unnecessary chemotherapies and by prescribing chemotherapy to women who have not received it based on standard decision criteria.

PMD52

DIAGNOSTICS IN COST-EFFECTIVENESS ANALYSIS: THE EVALUATION OF THE EOS 2D/3D X-RAY IMAGING SYSTEM

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OBJECTIVES: The EOS 2D/3D X-ray imaging system is a novel technology with potential clinical benefits in the evaluation of orthopaedic conditions. However, there is no evidence on other benefits in addition to those derived from reductions in the radiation dose. This study aims to evaluate the cost-effectiveness of EOS compared with standard X-ray and highlight some of the typical challenges in the evaluation of diagnostics. **METHODS:** A model was developed to evaluate the long-term cost-effectiveness of EOS. Costs were from a health service perspective and outcomes were measured as quality-adjusted life years (QALYs). Threshold analysis was used to establish the necessary size of the additional health benefits and the level of patient throughput needed for EOS to be considered cost-effective. **RESULTS:** The incremental cost-effectiveness ratio (ICER) of EOS was well above thresholds of £20,000 and £30,000 per additional QALY in all orthopaedic conditions under base-case assumptions. Patient throughput was a major determinant of cost-effectiveness. Threshold analysis on patient throughput showed that 17,700 to 27,600 scans per year with EOS, compared with 7,530 scans per year with computed radiography (CR), were needed to achieve an ICER of £20,000 per QALY. Health benefits over and above lower radiation would need to increase considerably for EOS to be considered cost-effective. **CONCLUSIONS:** The health benefits estimated from EOS as a result of radiation dose reductions were insufficient to justify the cost of the system. EOS can only be shown to be cost-effective when compared to CR if the utilisation of EOS is assumed to be about twice the utilisation of CR. EOS highlights some of the difficulties of establishing the relevant care pathway, potential indications, patient benefit from the imaging features, and patient throughput. The evaluation of EOS is an example of how methodological challenges presented by diagnostics can be overcome.

PMD53

MODELING THE HEALTH AND ECONOMIC CONSEQENCES OF SELF-MONITORING OF BLOOD GLUCOSE (SMBG) IN NON-INSULIN TREATED PATIENTS WITH TYPE 2 DIABETES MELLITUS (T2DM) IN SPAIN

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OBJECTIVES: Evidence from recent clinical studies has shown the benefits of SMBG plus a structured testing program (SMBG+STG) in non-insulin treated patients with T2DM. The Structured Testing Protocol (STeP) study found SMBG+STG can lead to improvements in glycemic control. This study assessed the cost-effectiveness of SMBG+STG versus SMBG alone from the Spanish health care system perspective in the context of recent studies of SMBG that have employed active education programs. **METHODS:** A discrete event simulation model was developed to simulate the economic and health outcomes based on A1c changes related to using SMBG+STG or SMBG alone. Baseline A1c (8.4%) changes over 1 year (-1.2% and -0.9% for SMBG+STG versus SMBG alone), discontinuation and hypoglycemia rates were from the STeP study. Population and cost inputs were from published Spanish sources. Over a lifetime horizon (>30yrs), the model predicts: diabetes related complications (cardiovascular disease, stroke, amputations, end stage renal disease), hypoglycemia, life years (LYs) and quality adjusted life years (QALYs). Costs associated with events were estimated. Benefits and costs were discounted at 5%. Uncertainty in model estimates, such as changes in price per strip, treatment groups, program component, and A1c differences, was explored with sensitivity analyses. **RESULTS:** SMBG+STG was predicted to reduce complications and associated costs. Lowering A1c and consequent complications prevention with SMBG+STG translated into a dominant incremental cost-effectiveness ratio. Comparisons with a group not utilizing SMBG yielded similar results. **CONCLUSIONS:** In the long term, SMBG+STG is a cost-effective option compared to SMBG alone. An A1c reduction of 0.3% is a cost-effective outcome. Decison makers should consider designing programs to educate patients about SMBG+STG.

PMD54

TRANS-CATHETER AORTIC VALVE IMPLANTATION FOR THE NON-OPERATIVE MANAGEMENT OF AORTIC STENOSIS: A COST-EFFECTIVENESS ANALYSIS

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OBJECTIVES: To assess the cost-effectiveness of TAVI compared with standard therapy consisting mainly of balloon aortic valvuloplasty (BAV) in patients with severe aortic stenosis who are ineligible for conventional aortic valve replacement (AVR) from the perspective of the Ontario health care payer. **METHODS:** A microsimulation decision analytical model was developed to estimate the incremental costs and benefits associated with both interventions over a lifetime time horizon. Monthly adverse event and patient mortality rates were determined using data from the PARTNER randomized control trial (cohort B). Quality of life values were determined through literature review, expert opinion, and data provided by the PARTNER investigators. The London Health Sciences Centre Case Costing Initiative and the Canadian Institute for Health Administration (CIHI) were used to estimate costs. Extensive sensitivity analyses were performed to explore the impact of uncertainty surrounding model parameters on the resultant cost-effectiveness estimates. The primary outcome measure was the incremental cost-effectiveness ratio (ICER) with benefits expressed as quality-adjusted life years (QALYs). Costs were expressed in 2011 CAD$. Both costs and benefits were discounted at 5%. **RESULTS:** The base case ICER was approximately $38,448 per QALY gained. The results of the sensitivity analyses yielded ICERs ranging from approximately $32,238/QALY to $43,887/QALY. ICER estimates were most sensitive to changes in the cost of the Edwards SapienTMDevice. **CONCLUSIONS:** At cost-effectiveness thresholds normally used to define value for money in health care, TAVI represents a cost-effective treatment option for patients with severe aortic stenosis who are currently ineligible to undergo conventional aortic valve replacement in the province of Ontario.

PMD55

SACRAL NERVE MODULATION (SNM) FOR THE TREATMENT OF IDIOPATHIC REFRACTORY OVERACTIVE BLADDER: COST-EFFECTIVE IN THE UK COMPARED TO OPTIMAL MEDICAL THERAPY, BOTULINUM TOXIN A (BONT-A) AND PERCUTANEOUS TIBIAL NERVE STIMULATION (PTNS)

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OBJECTIVES: Sacral Nerve Modulation (SNM) is a minimally-invasive technology indicated for overactive bladder (OAB). SNM efficacy has been widely demonstrated yet its cost-effectiveness in the UK is unknown. The cost-effectiveness of SNM in patients with refractory idiopathic OAB with urinary incontinence (OAB-wet) was compared to optimal medical therapy (OMT), Botulinum Toxin A (BoNT-A) and PTNS from the UK NHS perspective. **METHODS:** A published Spanish Markov model was adapted to current UK practice based on existing data and clinical expert advice. Treatment success was defined as >50% improvement in OAB-wet symptoms. Health care resource use included pre-,peri-, and post-procedure; drugs; follow-ups and adverse events. Both SNM using testing with tined-lead (SNM-tined-lead) and PNE (SNM-PNE) were evaluated. Incremental-cost-effectiveness-ratios (ICER;costs per quality-adjusted-life-year)were calculated for SNM vs. OMT and vs. BoNT-A (10yrs), and SNM vs, PTNS (5yrs); with uni-variate sensitivity analyses. **RESULTS:** At 10 years, the cumulative costs of SNM-tined-lead, SNM-PNE, BoNT-A and OMT were £22,052, £19,952, £18,477, £11,918, respectively; PTNS 5-year cumulative costs were £17,915.The QALYs for SNM-tined-lead, SNM-PNE, BoNT-A and OMT were 6.82, 6.64, 6.35 and 5.45 (10yrs), respectively, and 3.44 for PTNS (5yrs). ICERs were £7,608 and £7,356 for SNM-tined-lead vs. BoNT-A, and vs OMT (10yrs), respectively; SNM-tined-lead and SNM-PNE were dominant (less costly and more effective) compared to PTNS (5 years). SNM- tined-lead was cost-effective vs.SNM-PNE. ICERs were most sensitive to BoNT-A efficacy and costs, but results were generally robust. **CONCLUSIONS:** SNM in patients with OAB-wet provides additional quality of life improvement with higher initial costs for SNM that are offset by a reduction in follow-up costs over time. This produces ICERs that are clearly below the threshold generally considered for cost-effectiveness in the UK. SNM represents value for money compared to OMT, BoNT-A and PTNS, and may be considered the preferred treatment option in the UK.

PMD56

COST-EFFECTIVENESS ANALYSIS COMPARING THE APPLICATION OR NOT OF WHOLE BRAIN IRRADIATION BEFORE STEREOTECTIC RADIOSURGERY FOR THE TREATMENT OF ONE TO FOUR BRAIN METASTASES, ACCORDING TO BRAZILIANS THIRD-PARTY PRIVATE PAYER'S PERSPECTIVE

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OBJECTIVES: In patients with one to four brain metastasis, if diameter < 4 cm, the standard treatment is whole brain irradiation (WBI) followed by stereotactic radiosurgery (SRS). There is growing interest on the delivery of isolated SRS, aiming to reduce side effects of WBI, despite a higher risk of intra-cerebral recurrences. The objective of this study was to compare the cost-effectiveness of those two strategies, under Brazilians third-part payers' perspective. **METHODS:** A meta-analysis of summary data, including all phase III prospective trails that compared SRS to WBI+SRS, was performed. Data about recurrence management, dependant of on the lesion size, as well as of previous delivered treatment, were also extracted. Costs were estimated based on charges accordingly to Brazilian Health Care reimbursement rates for the private system (CBHPM). Only directs costs were considered, and were expressed in Brazilian Reais (BRL). A probabilistic sensitivity analysis was conducted to evaluate the robustness of the results. The perspective was that from the Brazilian Third Party payer. **RESULTS:** Three phase III prospective trials have been selected, including 467 patients. Once there was no difference in overall survival, effectiveness was evaluated according to local control. After two years of follow up, 78% [64.2-87.4%] of the SRS patients and 53% [47-57%] of the WBI+SRS patients have recurred. The incremental cost-effectiveness ratio (ICER) comparing WBI+SRS to SRS was of 7.489,60 BRL/year without cerebral recurrences. Sensitivity analysis showed that ICER remains acceptable under a wide range of assumptions . **CONCLUSIONS:** Results suggested that WBI+SRS might be considered as a cost-effective strategy in patients with up to 4 brain metastases. Once no detrimental survival effect have been shown, SRS can be cost-savings for Brazilians third-party payers, but patients need to be aware of the risks involved in not delivering WBI.

PMD57

THE COSTS-EFFECTIVENESS OF COBAN 2 FOR THE TREATMENT OF VENOUS LEG ULCERS IN THE NETHERLANDS

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OBJECTIVES: To assess the cost-effectiveness of 3M™ Coban™2 Layer Compression System (Coban 2) for the treatment of venous leg ulcers in the Dutch health care setting. **METHODS:** The health economic evaluation consists of a cost-effectiveness analysis. A Markov model was developed in order to determine the cost-effectiveness of Coban 2, which was based on different health states and allowed transitions between these states. Upon initiation of the compression system Coban 2, the patient is supposed to have an ulcer. Over time, the ulcer may heal, but it may also recur. The treatment with Coban 2 is compared with traditional treatment (Short Stretch Bandages (SSB)). The primary perspective of the study is that of the Dutch insurer in 2012. The actual costs, which are included in the study, are product costs and treatment costs. Clinical probabilities on healing and recurrence are derived from clinical published literature. **RESULTS:** The use of Coban 2 leads to a total cost of € 600 compared to € 2,663 for traditional care, which leads to cost saving of € 2,063 per patient over a period of 1 year. The effectiveness for Coban 2 is 84.5% time without symptoms; the effectiveness for traditional care is 65.0% time without symptoms, which is leading to a gain of 2.3 months without symptoms over period of 1 year. **CONCLUSIONS:** The use of Coban 2 versus traditional treatment is cost-effective, because it is cost saving in combination with a higher effectiveness. As a consequence the cost savings by Coban 2 also translates into a positive impact on total health care budget.

PMD58

COST-EFFECTIVENESS ANALYSIS OF LEPROSY CASE DETECTION METHODS IN NORTHERN NIGERIA

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OBJECTIVES: This study evaluated the cost-effectiveness of three leprosy case detection methods in Northern Nigeria to identify the most cost-effective approach to new case detection for improved leprosy control in Nigeria. **METHODS:** A cross-sectional study was carried out to evaluate the additional benefits of using several case detection methods in addition to routine practice in two north-eastern states of Nigeria. Primary and secondary data were collected from routine practice records and the Nigerian Tuberculosis and Leprosy Control Programme of 2009. Methods evaluated were Rapid Village Survey (RVS), Household Contact Examination (HCE) and Traditional Healers incentive method (TH). Effectiveness was measured as number of new leprosy cases detected and cost-effectiveness was expressed as cost per case detected. Costs were measured from both providers' and patients' perspectives. Additional costs and effects of each method were estimated by comparing each method against routine practise and expressed as incremental cost-effectiveness ratio (ICER). All costs were converted to the US Dollar at the 2010 exchange rate. Univariate sensitivity analysis was used to evaluate uncertainties around the ICER. **RESULTS:** The ICER for HCE was $142 per additional case detected at all contact levels and it was the most cost-effective method. At ICER of $194 per additional case detected, THs method detected more cases at a lower cost than the RVS which was not cost-effective at $313 per additional case detected. Sensitivity analysis showed that varying the proportion of shared costs and subsistent wage for valuing unpaid time did not significantly change the results. **CONCLUSIONS:** Complementing routine practice with household contact examination is the most cost-effective approach to identify new leprosy cases and we recommend that, depending on acceptability and feasibility, this intervention is introduced for improved case detection in Northern Nigeria.

PMD60

THE COSTS-EFFECTIVENESS OF 3M™ COBANTM 2 LAYER COMPRESSION SYSTEM (COBAN 2) FOR THE TREATMENT OF LYMPHOEDEMA IN THE NETHERLANDS

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OBJECTIVES: To assess the cost-effectiveness of 3M™ CobanTM2 Layer Compression System (Coban 2) for the treatment of lymphoedema in the Dutch health care setting. **METHODS:** The health economic evaluation consists of a cost-effectiveness analysis. A decision tree model was developed in order to determine the cost-effectiveness of Coban 2. The entry point of the model consists of patients with lymphoedema requiring treatment with compression bandages. The treatment with Coban 2 is compared with traditional treatment (Short Stretch Bandages). The primary perspective of the study is that of the Dutch insurer in 2012. The actual costs, which are included in the study, are product costs and treatment costs. **RESULTS:** The use of Coban 2 leads to a mean total cost of € 528 compared to € 630 for traditional care, which leads to a cost saving of € 102 per patient. The effectiveness for Coban 2 is higher because of a shorter treatment period, which leads to a reduction of the negative impact on Quality of life by lymphoedema. **CONCLUSIONS:** The use of Coban 2 versus traditional treatment is cost saving for each treatment period with a higher effectiveness, due to shorter treatment duration and improvement in Quality of Life. As a consequence the use of Coban 2 leads to a positive impact on the total health care budget.

PMD61

COST-EFFECTIVENESS OF POSITRON EMISSION TOMOGRAPHY IN HEAD AND NECK SQUAMOUS CELL CARCINOMA: A SYSTEMATIC REVIEW

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OBJECTIVES: Functional imaging with positron emission tomography (PET) is a promising non-invasive modality in the clinical management of squamous cell carcinoma of the head and neck (SCCHN). Currently, there is limited evidence that points to the potential cost-effectiveness of PET in this setting. The objective of this study was to assess the methodological quality of cost-effectiveness analyses (CEAs) of PET in SCCHN. **METHODS:** A systematic literature review was performed focusing on CEAs of PET in SCCHN using MEDLINE, EMBASE, NHS EED and the CEA Registry. Studies were screened according to a *priori* eligibility criteria. The methodological quality of the primary clinical studies was examined by QUality Assessment of Diagnostic Accuracy Studies checklist. CEAs were critically appraised using the Drummond checklist. **RESULTS:** A total of seven studies met the inclusion criteria. PET or computed tomography (CT) integrated with PET was assessed in two indications: detection of recurrent disease and screening for metastasis. In each indication, PET strategy ranged from likely to be cost-effective (in four studies) to